Remarks

Status of Claims

Claims 1-10 are pending in the present application. New claims 11-15 are added herein. By the final Office Action, Claims 1-10 are rejected under 35 U.S.C. 102(b) over Burke '076 and Claims 4-9 are rejected under 35 U.S.C. 102(b) over Blaser '979. These rejections are respectfully traversed and each of the claims will be considered in the following.

Specification Amendments

Paragraph **[0024]** is voluntarily amended to correct a typographical error. No new matter has been introduced.

Burke '076

Burke '076 Generally

Burke '076 describes an impact absorbing mat which "during [impact from an impacting body] the adjacent interengaging cell wall sections undergo telescopic contraction which expels air from the respective air cells in such a way that the mat exhibits a predominantly non-elastic cushioning action." Burke '076, col. 3, lines 46-52. The "interengaging cell wall sections are stepped, roughened, or provided with interengaging helical ribs and grooves for effecting a regulated increase in the elastic energy absorption which occurs in the mats during impact." Burke '076, col. 4, lines 6-11.

> In the mat of FIGURES 13-15, . . . when a pair of interengaging cell wall sections 302, 304 undergo telescopic contraction, the inner, small cell wall section 304 moves in step-wise fashion from one of the shoulders 308 on its respective large wall section 302 to the next shoulder. Simultaneously, the inner cell wall section is radially compressed. This step-wise telescopic contraction and radial compression which occurs in the interengaging cell wall sections 302, 304 during impact, introduce additional energy losses during impact which are effective to dissipate the energy of the impacting body. In this way, the impacting cushioning ability of the mat in FIGURES 13-15 may be enhanced without increasing the rebound tendency of the mat.

In other words, increasing frictional losses which occur in the impact cushioning action of a mat increases the total impact energy which may be cushioned by the mat without increasing the component of the impact energy which is absorbed by elastic deformation of the resilient members of the mat.

Burke '076, col. 10 lines 32-49.

"It is significant to note that in the impact cushioning mat of FIGURES 13-15 . . . annular vent passages exist between the respective telescopically engaging cell wall section 302, 304 . . . through which air is expelled from the air cells during impact and through which the air returns to the air cells during subsequent restoration of the mats to their original condition following impact." Burke '076, col. 11 lines 11-18.

Claims 1-3

Claim 1 includes the limitation "each spring structure bottom layer having a larger contact surface area than the corresponding top layer thereby providing a higher compression rate than the corresponding top layer." The Office Action indicates that "the claim merely states a top and bottom aligned spring structure, with one of the structures having a larger contact surface area. The stepped portions in Burke are interpreted as providing a progressively larger contact area for contacting the corresponding compression structure."

Assuming *arguendo* that large cell wall section 302 of Burke '076 (Fig. 14) is the bottom layer of claim 1 and that the small cell wall section 304 is the top layer of claim 1, the bottom layer does not have "a larger contact surface area than the corresponding top layer" as required by claim 1. At best, Burke '076 discloses a large cell wall section 302 having a larger overall surface area (due to the step surfaces) than the small cell wall section 304. This is not the same as a contact surface area. The "small cell wall section 304 moves in step-wise fashion from one of the shoulders 308 on its respective large wall section 302 to the next shoulder." Burke '076, col. 10, lines 34-36. This is also illustrated in Fig. 15 (cross section taken on line 15-15 of Fig. 14) of Burke '076. Therefore, it appears that the only portion of large cell wall section 302 that contacts small cell wall section 304 is shoulder 308.

Next, even assuming *arguendo* that shoulder 308 is the contact surface area of claim 1, each subsequent shoulder 308 is of a smaller diameter. Therefore, as the structure radially compresses and moves in step-wise fashion to the next shoulder, the next shoulder actually has a smaller contact surface area (calculated as $\pi * r^2$). By contrast as the structure of Claim 1 compresses, the next or bottom layer has a larger contact surface area thereby providing a higher compression rate than the corresponding top layer.

For at least the foregoing reasons, applicant asserts that claims 1-3 are not anticipated by Burke '076.

Claims 4-6

Claim 4 requires, among other limitations, a plurality of layered spring structures and a plurality of compression structures. The Office Action indicates that the "plurality of spring structures" corresponds to 300 of Burke '076. However, Burke '076 indicates that "the relatively large cell wall sections [302], relative small cell wall sections [304], and supporting posts [306 comprise] the integral rib structure 300." Burke '076, col. 10, lines 10-13. Assuming *arguendo* that integral rib structures 300, which includes large cell wall section 302 and small cell wall section 304, are the "layered spring structures" of claim 1, it is not understood where Burke '076 discloses the plurality of compression structures required by claim 1. In addition, claim 4 requires, among other limitations, at least one layered compression structure aligned over a layered spring structure. Burke '076 discloses no such structure.

Furthermore, even assuming *arguendo* that the large cell wall section 302 is the "compression structure of claim 1," Burke '076 does not disclose the limitation "wherein at least one of the compression structures is layered to provide gradual changes in compression rate as increasing force is applied pressing the base and top sheets together." By way of example, paragraph [0023] of the present application indicates that "the compression rate of the second layer is greater than that of the first layer to the degree that the second layer has a larger surface area than the top layer." As discussed *supra*, the Burke '076 structure radially compresses and moves in step-wise fashion to the next shoulder which actually has a smaller contact surface area. Essentially, the structure in Burke '076 introduces "additional energy losses during impact which are effective to dissipate the energy of the impacting body." Burke '076, col. 10, lines 37-42. Rather than providing gradual

changes in compression rate as in Claim 4, the Burke '076 structure is attempting to provide for friction losses in addition to "an arresting force . . . developed . . . by elastic deformation of the supporting posts [306] and . . . by compression of the air in the air cells." Burke '076, col. 8, lines 63-68.

For at least the foregoing reasons, applicant asserts that claims 4-6 are not anticipated by Burke '076.

<u>Claims 7-10</u>

Claim 7 includes limitation "wherein the spring structure is layered with progressively larger contact areas for contacting the corresponding compression structure." By contrast, the Burke '076 small wall section 304 (referring to Fig. 14) telescopically slides into the large wall section 302. Apparently (according to Burke '076 col. 10 lines 31-37), the small wall section 304 compresses radially inwardly in order to telescope further into the large wall section 302. If anything, as discussed *supra*, Burke '076 discloses a large cell wall section 302 with progressively <u>smaller</u> contact areas because the diameter of each shoulder 308 is smaller than the next.

For at least the foregoing reasons, applicant asserts that claims 7-10 are not anticipated by Burke '076.

<u>Blaser '979</u>

<u>Claims 4-6</u>

The Office Action states that "with regards to Blaser, it is noted that figure 16 is substantially identical to figure 4C in the instant application and is thus interpreted as capable of performing the recited features." The Blaser '979 structure is merely a telescoping set of concentric cylinders that are interconnected to one another like a spring. Thus, each one of the inner connection sections 17, 18 are flexing (actually in tension rather than in compression) upon compression between the bottom wall 25 and the top wall 14. Since all the sections are flexing at all times, there is no "layer to provide gradual changes in compression rate" as in Claim 4. Moreover, Blaser '979 only shows a plurality of enclosures 15 on the bottom of pad 14. Thus, Blaser '979 does not include least one layered compression structure aligned over a layered spring structure.

Thus it is submitted that Claims 4-6 are not anticipated by Blaser '979.

<u>Claims 7-9</u>

Similarly, Blaser '979 does not disclose "a first base having a layered spring structure formed thereon" and "a second base having a compression structure formed thereon" as claim 7 requires. At best, Blaser '979 only discloses one structure whereas claim 7 requires two. Furthermore, the Blaser '979 structure is merely a bellows structure with interconnected cylindrical sections that flex during compression of the unit. It is submitted that such a structure does not anticipate a "layered spring structure with progressively larger contact areas for contacting the corresponding compression structure" as in Claim 7.

Claim 8 specifies that the compression section is substantially flat (such as for example the compression layer in Fig. 4C) and Claim 9 specifies that the compression layer is layered (such as for example Fig. 1A). Thus according to Claim 9, the spring assembly has both a layered spring structure and layered compression structure. As to Blaser '979, the Office Action points to the same enclosure 15 as both the spring structure and the compression structure whereas Claim 9 sets forth two structures.

New Claims 11-15

New claims 11-15 are submitted to more completely claim the invention and are believed to be patentable over the art of record for at least the reasons discussed *supra*. Furthermore, the Blaser '979 structure (enclosure 15) defines air chambers. Blaser '979, col. 3, lines 42-43. Thus the Blaser '979 structure is hollow whereas the spring structure(s) and compression structure(s) of claims 12-15 are solid.

Conclusion

The Applicant submits that the application is in a condition for allowance and respectfully requests a Notice of Allowance. If the Examiner has any concerns about the application, or if the undersigned attorney can assist in expediting the allowance of the application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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